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APPLICATION FOR UNITED STATES LETTERS PATENT

FOR

FLIP-TOP CONTAINER CLOSURE APPARATUS

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CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation of U.S. Application Serial No. 09/867,857, filed May 30, 2001, now U.S. Patent No. 6,685,055, which claims the benefit of U.S. Provisional Application No. 60/207,802, filed May 30, 2000, each of which is hereby incorporated by reference in its entirety.

BACKGROUND AND SUMMARY OF THE INVENTION

[0002] The present invention relates generally to containers useful for products that may be poured from the container and, more particularly, to improved closures secured to said containers. For example, paperboard cartons are generally well known. A familiar type is the milk carton which has a gabled top. Also, becoming ever more popular are rectangular shaped cartons (e.g., parallelepipedic containers), some of aseptic quality, for containing beverages, powdered goods, viscous food products, and practically any other pourable substance. To prevent waste, provide for ease of pouring, and prevent contamination of the product, improved pour-through closure apparatus for securing openings in the containers are needed. Practically any container for holding pourable contents may benefit from the improved closure of the present invention.

[0003] Push-tabs have been used in combination with container closure apparatus, which are designed to be depressed into and through the material of the container. The push-tabs serve to open a partially pre-cut area on the surface of the container below the closure. The push-tab separates the material of the container and

serves to hold the material apart to maintain the opening during pouring. These closure push-tabs have generally required that the push-tab be pressed through the partially pre-cut material of the container by a finger or other external object. This often results in contact by a portion of the finger or other object with the material inside the container, which may cause contamination or user frustration.

[0004] The present invention provides a pivoting closure apparatus, wherein an opening lever may be lifted by a rear portion, causing a forward portion to pivot or rotate downward and separate the partially pre-cut material from the container. The present invention allows a container to be opened and resealed while minimizing the chance that a finger or other foreign object will contact the material inside the container.

[0005] The present invention may also contain a simple but effective device that allows a user of the container to discern whether the container has been previously opened, while still allowing the container to be resealed.

[0006] In addition to the novel features and advantages mentioned above, other objects and advantages of the present invention will be readily apparent from the following descriptions of the drawings and exemplary embodiments.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The various features and advantages of the present invention may be more readily understood with reference to the following detailed description taken in conjunction with the accompanying drawings, wherein like reference numerals designate like structural elements, and in which:

[0008] Figure 1 is a perspective view of one embodiment of the closure apparatus of the present invention attached to the top of a package or container;

[0009] Figure 2A is a plan view of the closure apparatus of Figure 1 with the cover in a closed position;

[00010] Figure 2B is a plan view of the closure apparatus of Figure 1 with the cover in an open position;

[00011] Figure 3 is an enlarged section view taken along line 3 - 3 in Figure 1;

[00012] Figure 4 is a side elevational view illustrating the opening lever in an open position, wherein the container is shown as cut away, allowing a portion of the opening lever and the material of the container top to be observed; and

[00013] Figure 5 is a plan view depicting the bottom surface of an exemplary embodiment of the closure apparatus of the present invention.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENT(S)

[00014] Referring now to the drawings, a closure apparatus **10** for opening and resealing a container **12** is shown in Figure **1**. The container **12** may be made from a penetrable material, and may contain a dispensable fluid, powder, particulate solid substance, or any other pourable contents. The container **12** may be a non-aseptic container or an aseptic quality container.

[00015] Figure **2A** shows the closure apparatus **10** affixed to the container top **14** with its cover portion **11** in a closed position. In other embodiments, the closure apparatus **10** may be affixed to another portion of a container. For example, the closure apparatus **10** may also be secured to a side or the bottom of a container.

[00016] Referring now to Figure **2B**, the closure apparatus **10** may have a base **20**. The base **20** may be affixed to the container top **14** by any suitable means, such as an adhesive applied to its bottom surface **22** (Figure **5**). A wall **24** of the base **20** may

extend from a top surface **26** of the base **20**. In an exemplary embodiment, as depicted in Figure **2B**, the wall **24** may have any desired shape including, but not limited to, an oval, tapered, or rounded shape. The wall **24** preferably has a forward portion, which may form a spout **28**. An inner side wall **30** preferably extends around the periphery of the wall **24**, to define an opening **32** through the base **20** of the closure apparatus **10**. A section of the wall **24** may be removed from the rearward portion, such that a notch or cutout portion **34** is formed in the wall for receiving an opening lever **36**.

[00017] The closure apparatus **10** may further include a cover **11**. The cover **11** may be hinged to the base **20** and formed as one piece construction with the base **20** in the same forming operation, such as by a suitable or conventional injection molding process using plastic material. The cover **11** may be hinged at one side of the base **20** to avoid interfering with the movement of an opening lever **36**. The cover **11** may include a securement device, such as a tab **13** to be snapped in place into a receptacle **15** formed in the base **20**. Alternatively, the cover **11** may have a receptacle that is adapted to receive a tab of the base **20**. Furthermore, any other desired or suitable securing methods may be employed to maintain the cover **11** in a closed position over the base **20** until the user is ready to pour contents from the container **12**. The cover **11** serves to protect the opening **32** and a sealing portion **38** of lever **36** from contact with foreign matter or human contact until the user is ready to pour contents from the container **12**.

[00018] The sealing portion **38** is preferably of substantially the same shape as that of the interior periphery of the wall **24**. The sealing portion **38** is preferably made to reside within and substantially against the wall **24** to form a seal. The opening lever **36**

may be detachably connected to the wall **24** by two trunnions **40** (Figure **5**) located on either side of the opening lever **36**. The trunnions **40** may engage with two notches **42** (Figure **5**) located along the interior of the wall **24**, to allow the opening lever **36** to pivot. Nevertheless, it should be recognized that the lever **36** may be pivotally or rotatably connected to the base **20** by any suitable means including, but not limited to, male-female connections, ball and socket connections, belt and pulley connections, chain and sprocket connections, hinge connections, and other similar, suitable, or conventional types of pivotal or rotatable connections that are now known or may be later developed. The opening lever **36** also has a lifting portion **44** which preferably extends rearwardly from the sealing portion **38**. The lifting portion **44** may be disposed in the notch **34** when the opening lever **36** is in its closed position, and may further extend substantially past the area of the base **20** (e.g., about a quarter inch or more in extended length), to form a grasping portion **45**, to make it easier for a user to grasp the lifting portion **44** and open the container. However, in other embodiments of the present invention, the lifting portion **44** may only extend a little or not at all beyond the base **20** when in the closed position.

[00019] As can be seen in Figure **4**, exertion of an upward force on the lifting portion **44** will cause the opening lever **36** to pivot about the trunnions **40** (Figure **5**), wherein a section of the sealing portion **38** may pass through the central opening in the base **20** and break through the partially pre-cut material **60** of the container **12**. The lever **36** may further include at least one beak **37** or teeth to aid in penetrating the material **60**. In a preferred embodiment, the beak **37** is well defined to come to a sharp point of about an eight inch or longer, to assist in opening thicker package material.

[00020] As can be seen in Figure **5**, a backstop **26** may be included in or connected to the base **20** at the rear of the opening **32,** under the lever **36,** to limit rotation of the opening lever **36**, thus preventing the opening lever **36** from being over-rotated and inadvertently covering a portion of the spout **28** with the lifting portion **44**. In particular, a bottom surface of the lever **36** may abut against the backstop **26** when the lever **36** is in a completely open position. Use of a backstop **26** provides another benefit: it may eliminate the need for any obstruction through the pour zone of the opening **32** for use in stopping over-rotation of the lever **36** by making contact with a top surface of the lever **36**. By eliminating any obstruction in the pour zone of the central opening **32**, the pour zone may be larger in area, resulting in greater flow rates of product from the container. In one preferred embodiment of the present invention, the pour zone (that area through which product may flow through the central opening when the lever is in the wide open position against the backstop) is at least about 1/2 inch (more preferably at least about 5/8 inch and still more preferably at least about 11/16 inch) wide at its widest point, and at least about 1/2 inch (more preferably at least about 3/4 inch and still more preferably at least about 13/16 inch) long (as measured at its longest point, from the front central portion of the pour zone at the spout **28**, to the top surface of the lever **36** as the lever **36** rests against the backstop **26**). While these dimensions may of course be varied up or down, they are substantially greater than prior pour zones of less than half the area of this preferred embodiment. Nevertheless, it should be recognized that alternative embodiments of the present invention may include an obstruction that extends at least partially over the pour zone. After being moved into an open position, the opening lever **36** may be returned to its closed and

sealed position, as illustrated in Figure **1** and Figure **3**, by exertion of a downward force on the lifting portion **44**.

[00021] As seen in Figure **2A** and Figure **2B**, the closure apparatus **10** may also contain a tamper resistant device **52**. The elements of a preferred embodiment of the tamper resistant device **52** may be seen in Figure **4**. Referring to Figure **4**, a post **56** extends upward from the top surface of the base **20**. A ring **58** is detachably attached to a notch **54** (Figure **4**) in the cover **11**. The ring **58** is designed to break away from the notch **54** and remain on the post **56** when the cover **11** is lifted into its open position. At assembly, the post **56** may be of a uniform diameter. After closing the cover **11** in place over the base **20**, the top of the post **56** may be enlarged by any suitable method, such as by a slight melting, to prevent further removal of the ring **58** from the post **56**. Upon opening the cover **11** into its open position for the first time, the ring **58** preferably detaches from the notch **54** and remains on the post **56** as evidence that the cover has been opened.

[00022] The exemplary embodiments herein disclosed are not intended to be exhaustive or to unnecessarily limit the scope of the invention. The exemplary embodiments were chosen and described in order to explain the principles of the present invention so that others skilled in the art may practice the invention. Having shown and described exemplary embodiments of the present invention, those skilled in the art will realize that many variations and modifications may be made to affect the described invention. Many of those variations and modifications will provide the same result and fall within the spirit of the claimed invention. It is the intention, therefore, to limit the invention only as indicated by the scope of the claims.